REMARKS

In the Office Action of October 14, 1999, claims 3-5, 7-10, 13-15, 17-22, 31-43 and 47-48 were rejected under Section 112 as being indefinite for various reasons. These rejections have all been addressed by appropriate amendments to the claims to delete the objectionable term "substantially", to provide proper antecedent basis for all terms and to correct terminology where needed. With these amendments, it is believed that all of the Examiner's rejections under Section 112 have been overcome and reconsideration is respectfully requested.

The Examiner's indication of allowable subject matter in claims 9, 10, 19-22, 31-32, 36-37 and 41-42 is acknowledged and appreciated.

The claims other than those indicated as containing patentable subject matter have been rejected under Section 103 as unpatentable over Patent No. 5,667,880 issued to Okaniwa or over Okaniwa in view of Patent No. 5,372,874 issued to Dickey et al.

Before responding specifically to the rejections based on prior art, it is appropriate to briefly summarize the essence of the present invention. As discussed in the background and summary of invention sections of the present application, a wide variety of coating materials are known for providing antireflective coatings on substrates. The prior art shows that antireflective coatings applied to a substrate may comprise alternating layers of high and low index of refraction materials and various other combinations. The field of art is extremely crowded. This is to be expected since a change of material, thickness, refractive index or position of a single layer in a combination of layers can result in a coating of dramatically different properties and performance. In many prior art systems, the high refractive index, hard metal oxides such as titanium dioxide are preferred because they provide excellent

antireflection performance characteristics. Although the sputtering of these hard metal oxides onto a substrate is relatively slow and generates significant heat, this is generally not an issue when applied to glass substrates. However, it is of significant concern if such materials are to be sputtered onto temperature-sensitive substrates such as plastics which have melting points below that of glass because the heat generated by such sputtering can melt or deform the plastic substrate.

The '162 patent inventors, however, have recognized that certain soft metal oxides having certain refractive indices may be sputtered more quickly than hard metal oxides, thus resulting in the generation of less heat, thereby making them much more suitable for sputter deposition onto plastic substrates. Further, these soft metal oxides are substantially transparent and thus facilitate the formation of clear or substantially transparent antireflection coatings.

Still further, the '162 patent inventors have unexpectedly found that certain antireflection coatings with layers comprised of these soft metal oxides have performance characteristics comparable to prior art hard metal oxide antireflection coatings. In accordance with the discussion below, the claims, in their amended form, patentably distinguish from the references applied by the Examiner. Reconsideration is respectfully requested.

The independent claims presently in the application which have been rejected in view of prior art include independent claims 1, 8, 33, 38, 39, 40, 43 and 47.

The new reference (Okaniwa) relied upon by the Examiner relates to an electroconductive antireflection film. Applicants object to the Examiner's characterization of the "teachings" of this reference on two major grounds. First, the Examiner acknowledges that Okaniwa discloses only glass substrates and fails to disclose that the substrate material may also be plastic. The Examiner's position,

however, in this regard is that since both glass and plastic materials are well-known substrate materials and since the specification fails to teach the criticality of having one particular substrate, it would have been obvious to one of ordinary skill in the art to select either material. This is not true. As indicated above, and as set forth in the present specification, the use of hard metal oxides such as titanium dioxide is detrimental to the coating of plastic substrates. Because of the high temperatures and extended times needed to sputter titanium dioxide, its application to a plastic substrate will soften and deform, if not melt, the plastic substrate. Thus, it is submitted that the criticality of having the substrate be plastic in the present invention is disclosed in the present application and each claim of the present application is expressly limited to a plastic or other temperature sensitive substrate with a melting point less than glass. For this reason, this limitation in all of the claims is extremely important and reconsideration is respectfully requested.

Secondly, the Examiner has taken the position that Okaniwa "teaches" an antireflection film in which a second layer is composed of a high refractive index layer having a refractive index between 1.8 to 2.9 and a fourth layer comprised of an electroconductive material such as tin-doped indium oxide (ITO) with an index of refraction of 1.97.

Applicants strongly dispute these conclusions regarding the "teachings" of Okaniwa. Specifically, it is not sufficient for a reference to merely disclose the identification of a chemical compound or various combinations of high and low refractive index materials. Such a disclosure is not enabling, and thus not prior art. To be enabling, the reference must disclose that the compound or the particular combination of material layers, etc. has in fact been made. If this were not the case, it would be possible for an individual, even one who is untrained, to permute all possible chemical combinations

of elements, or combinations of high and low index materials in an antireflection coating, publish the list, and effectively prevent others from securing patent rights on compounds that may never have been isolated and for which uses may therefore never have previously been conceived. Such a reference is nonenabling and demonstrates on its face that it is not been made and placed in the possession of the public.

Although Okaniwa discloses that the electroconductive material layer and the high refractive index layer (the H- layer) have an overlapping material, namely ITO, there is no showing that a structure having two ITO layers, one serving as the electroconductive material layer and the other serving as the H layer, was ever made. In fact, the disclosure of Okaniwa is to the contrary. Although column 5 of Okaniwa discloses the possibility of using two ITO layers in the structure, there is absolutely no indication that such a structure was ever made. For example, Okaniwa discloses nine specific structures in tables 1 through 9. Not a single one discloses more than one ITO layer. Further, every single one discloses the existence of titanium dioxide (TiO_2) which, as disclosed in the present application, is extremely detrimental to the plastic substrates of the present invention.

The importance of the Okaniwa reference as the importance of the invention of Okaniwa to include at least one layer of titanium dioxide is confirmed by its claims. Specifically, each claim of Okaniwa requires at least one of the two oxide layers to comprise titanium dioxide and that such material be adjacent to the electroconductive layer.

This is an extremely important point. Specifically, the teachings of the Okaniwa reference do not comprise all of various combinations of high and low refractive index materials and other possible materials which could make up those layers. Rather, it teaches only those structures for which there is

an enabling disclosure. This requires the existence of a titanium dioxide layer in each film of Okaniwa for where there is an enabling disclosure.

All of the independent claims rejected in view of prior art, namely, claims 1, 8, 33, 38, 39, 40, 43 and 47, include limitations which are clearly distinguishable from the Okaniwa reference either individually or in combination with other references such as Dickey. Specifically, all of the independent claims are limited to coatings applied to "plastic" or temperature sensitive substrates with melting points lower than glass. This is critical, as discussed above, and clearly distinguishes from the Okaniwa reference.

Further, all of the above independent claims include language which eliminates titanium dioxide as a component layer of the material and thus distinguishes the Okaniwa reference in which all its enabling disclosures, including all of its claims, specifically requires the existence of a titanium dioxide layer. For example, all of the independent claims require the individual layers to either have refractive indices between 1.9 and 2.2, or refractive indices less than that. All of these distinguish from the material such as titanium dioxide which has a refractive index of about 2.35. Further, the high refractive index materials of the present claims (those with refractive indices of between 1.9 and 2.2) are further limited to a specific group of compounds, namely, the soft metal oxides identified in the claims. Further,. independent claim 40 includes limitations which preclude both of the high refractive index materials from comprising ITO. This clearly distinguishes from the Okaniwa reference.

Claim 43 which has been rejected as unpatentable over Okaniwa in view of Dickey is patentable for the same reasons as discussed above in that it is limited to a coating for plastic substrate and excludes any titanium dioxide layer. Further, the Examiner has taken the position that the claimed

optical thickness for the second layer (the second layer from the outside) is disclosed in Dickey. However, as shown in Dickey, the second layer of Figure 1 (reference character 16) has a refractive index of about 2.35, in Figure 3 the second layer (reference character 32) are "low refractive index materials" and in Figure 6, the second layer (reference character 38) is a metal layer. Thus, Dickey fails to disclose the deficiencies of the Okaniwa reference.

For all of the above reasons and particularly in view of the amendments to the claims, the discussion of the references and the distinction between the claims and the references, it is believed that the claims presently in the application for allowance and such action is respectfully requested.

In the event the Examiner has any questions regarding the claims or the distinctions between the claims and the prior art, the Examiner is respectfully requested to telephone the undersigned if it is believed that such a call would expedite the prosecution of the present application.

Respectfully submitted,

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